REMARKS

By this reply, claims 26 and 40 have been cancelled; claims 1, 27 and 33 have been amended; and new claims 44 and 45 have been added, leaving claims 1-25, 27-29, 31-39 and 41-45 pending in the application. Reconsideration and allowance are respectfully requested in light of the following remarks.

Allowable Subject Matter

Applicants gratefully acknowledge that claim 14 has been allowed, and claim 15 has been indicated to contain allowable subject matter. For the reasons stated below, however, Applicants respectfully submit that all pending claims are patentable.

First Rejection Under 35 U.S.C. § 103

Claims 1-13, 16-29, 31 and 33-43 stand rejected under U.S.C. § 103(a) over U.S. Patent No. 5,133,137 to Petersen ("Petersen") in view of DE 195 00 383 A1 ("DE '383"). The reasons for the rejection are stated at pages 2-3, numbered point (3), of the Office Action. Claims 26 and 40 have been cancelled. The rejection is respectfully traversed.

Claim 1 has been amended to include the features of claim 26. Claim 1, as amended, recites a device for continuous thermal treatment of granular bulk material (granulate) comprising, *inter alia*, "a plurality of fluidization chambers; a product inlet terminating in a first chamber located farthest upstream, the first chamber occupying a major part of a total volume of the plurality of chambers; ... several adjacent fluidization chambers with a separate sieve bottom each through which, via a gas

inlet, a fluidization gas can be injected into a respective chamber to fluidize the granulate, the fluidization gas can exit via a gas outlet disposed in a roof area of the device, ... and a zigzag separator forming a roof of the chambers between a surface of the fluidized layer and a fluidization gas vent" (emphasis added).

As recited in claim 1, the term "major part" means about 50% or even more. Accordingly, the claimed first chamber occupies about 50% or more of the total volume of the plurality of fluidization chambers of the device. See paragraph [0025] of the specification. See also Figures 1 and 2, which show an exemplary embodiment of the device including the first chamber 2 occupying about 50% of the total volume of the chambers 2-6. Claim 27 recites that "the volume of the first chamber accounts for roughly half of the total volume of all chambers." Figures 5b and 5c show an exemplary embodiment of the device including five chambers where the first chamber occupies more than 50% of the total area of the chambers. Figure 5b shows that the first chamber can occupy more than 50% of the total volume. Figure 5c depicts the product temperature versus A/A_{tot}, where A/A_{tot} = sieve bottom area / total sieve bottom area. Figure 5c shows that the sieve bottom area of the first chamber equals 2/3 of the total sieve bottom area of the chambers. As described in paragraph [0025], the claimed device can advantageously achieve, in the first chamber, large-volume fluidization with a lower particle density than in the downstream chambers. Applicants submit that the applied references fail to suggest the device recited in claim 1 for the following reasons.

Peterson discloses a fluid bed dryer. The fluid bed dryer shown in Figure 1 of Peterson includes a most-upstream compartment 13; downstream compartments 14 defined by partition walls 15; perforated bed plates 16, 17 forming floors of the

compartments; side walls 11; top wall 12 forming the roof of the device; gas discharge opening 20 formed in the top wall 12; and a product outlet 23. The Office Action acknowledges that Peterson does not disclose the recited "zigzag separator."

In addition to not disclosing the recited "zigzag separator," Peterson also does not disclose or suggest that the most-upstream compartment 13 has any particular volume, much less that it occupies a major part of a total volume of the all of the chambers of the fluid bed dryer.

EP '383 also fails to suggest at least the features of "a first chamber located farthest upstream, the first chamber occupying a major part of a total volume of the plurality of chambers," as recited in claim 1. Accordingly, even if the teachings of Peterson and EP '383 were combined, the combined teachings of these references would not result in a device for continuous thermal treatment of granular bulk material that comprises all of the features recited in claim 1. Accordingly, the applied references do not support a *prima facie* case of obviousness with respect to claim 1. See M.P.E.P. § 2143.03. Thus, claim 1 is patentable.

The device recited in dependent claims 2-13, 16-29, 31, 41 and 42 is also patentable over the applied references for at least the same reasons as those for which claim 1 is patentable.

Claim 33 has been amended to recite the features of claims 1 and 40. Claim 33, as amended, recites a method for continuous thermal treatment of granular bulk material comprising, *inter alia*, "providing a device comprising: a plurality of fluidization chambers; a product inlet terminating in a first chamber located farthest upstream, the first chamber occupying a large part of a total volume of the chambers; ... several adjacent fluidization chambers with a separate sieve bottom

chambers; ... several adjacent fluidization chambers with a separate sieve bottom each through which, via a gas inlet, a fluidization gas can be injected into a respective chamber to fluidize the granulate, the fluidization gas can exit via a gas outlet disposed in a roof area of the device, ... and a zigzag separator forming a roof of the chambers between a surface of the fluidized layer and a fluidization gas vent; conducting the granulate through the fluidization chambers arranged in series, wherein ... the fluidization gas is injected into the first chamber at a higher pressure and/or at a higher gas speed than the fluidization gas is injected into the other chambers" (emphasis added). In the method recited in claim 33, the feature that the first chamber occupies a major part of a total volume of the plurality of chambers relates to the feature that the fluidization gas is injected into the first chamber at a higher pressure and/or a higher gas speed than into the other chambers.

For reasons discussed above, Peterson and EP '383 both fail to suggest the method recited in claim 33 comprising providing a device comprising, *inter alia*, "a first chamber located farthest upstream, the first chamber occupying a large part of a total volume of the chambers." In addition, the applied references fail to suggest other features of the method recited in claim 33 including, for example, that "the fluidization gas is injected into the first chamber at a higher pressure and/or at a higher gas speed than the fluidization gas is injected into the other chambers."

Accordingly, even if the teachings of Peterson and EP '383 were combined, these combined teachings would not result in a method for continuous thermal treatment of granular bulk material that comprises all of the features recited in claim 33. Accordingly, the applied references do not support a *prima facie* case of obviousness with respect to claim 33. Thus, claim 33 is also patentable.

The method recited in dependent claims 34-39 and 41-43 is also patentable for at least the same reasons as those for which claim 33 is patentable. For example, claim 43 recites that "the granulate is polymer granulate, and the polymer granulate is continuously crystallized while being conducted through the fluidization chambers." The claimed method can provide advantages when used to crystallize polymer granulate, as recited in claim 43. As recited in claim 33, from which claim 43 depends, the fluidization gas is injected into the first chamber at a higher pressure and/or at a higher gas speed than the fluidization gas is injected into the chambers downstream of the first chamber. This feature is advantageous when the method is used for the crystallization of polyesters (recycled chips from post-consumer bottle PET or granular PET in pellet form) insofar as the polyester product that has not yet, or has minimally crystallized, in the first chamber, is far more sticky than the product in the adjacent downstream chambers where a lesser degree of fluidization is sufficient. In an exemplary embodiment of the claimed method, in the first chamber, almost all particles can be largely crystallized. See the description at paragraphs [0018] and [0025] of the specification. The applied references fail to suggest the method recited in claim 43.

Withdrawal of the rejection is respectfully requested.

Second Rejection Under 35 U.S.C. § 103

Claims 1-13, 16-29, 31 and 33-43 stand rejected under 35 U.S.C. § 103(a) over U.S. Patent No. 2,316,664 to Brassert et al. ("Brassert") in EP '383. The reasons for the rejection are stated at pages 3-4, numbered point (4), of the Office

Action. Claims 26 and 40 have been cancelled. The rejection is respectfully traversed.

Brassert discloses an apparatus for facilitating and controlling chemical reactions or physical treatments. As shown in FIG. 1 of Brassert, the apparatus includes partitions 132. The Office Action acknowledges that Brassert does not disclose the recited "zigzag separator."

In addition to not disclosing the recited "zigzag separator," Brassert also does not disclose or suggest the features of "a plurality of fluidization chambers; a product inlet terminating in a first chamber located farthest upstream, the first chamber occupying a major part of a total volume of the plurality of chambers" (emphasis added), as recited in claim 1.

As discussed above, EP '383 also fails to suggest these claimed features. Accordingly, the device recited in claim 1 is patentable over the applied combination of references.

The device recited in dependent claims 2-13, 16-29, 31, 41 and 42 is also patentable over the applied references for at least the same reasons as those for which claim 1 is patentable. Moreover, these dependent claims recite additional features that are neither taught nor suggested by the applied references. For example, claim 19 recites that "the sieve bottoms of all chambers are disposed in a single plane." For example, in the embodiment of the device depicted in Figure 1, all of the sieve bottoms 11 of the chambers 2-6 lie along a single horizontal plane. In stark contrast, Brassert discloses a permeable bottom surface through which gas flows, but which does not lie in a single plane because Brassert's device includes a downwardly inclined section 18 shown in Figure 1 of Brassert. The applied

references provide no suggestion or motivation to modify Brassert's device to result in the device recited in claim 19.

For reasons discussed above, Brassert and EP '383 fail to suggest the method recited in claim 33 comprising providing a device comprising, *inter alia*, "a first chamber located farthest upstream, the first chamber occupying a large part of a total volume of the chambers." The applied references also fail to suggest additional features of the method recited in claim 33 including, *inter alia*, that "the fluidization gas is injected into the first chamber at a higher pressure and/or at a higher gas speed than the fluidization gas is injected into the other chambers." Accordingly, the applied references do not support a *prima facie* obviousness with respect to claim 33. Thus, claim 33 is also patentable.

The method recited in dependent claims 34-39 and 41-43 is also patentable over the applied references for at least the same reasons as those for which claim 33 is patentable. Therefore, withdrawal of the rejection is respectfully requested.

Third Rejection Under 35 U.S.C. § 103

Claim 32 stands rejected under 35 U.S.C. § 103(a) over Petersen or Brassert in view of EP '383. The reasons for the rejection are stated at page 4, numbered point (5), of the Office Action. The rejection is respectfully traversed.

Claim 32 depends from claim 1. Applicants submit that the applied combination of references fails to suggest modifying Peterson or Brassert in a manner to result in the device recited in claim 1. Thus, claim 32 is also patentable. Therefore, withdrawal of the rejection is respectfully requested.

New Claims

Claim 44 depends from claim 1 and recites that "a sieve bottom surface of the first chamber accounts for 2/3 of the total sieve bottom surface of all chambers." See Figure 5c.

Claim 45 depends from claim 33 and recites that "the absolute filling height of the fluidized granulate in the first chamber is greater than in each of the chambers downstream of the first chamber." Support for these features is provided, for example, in Figure 2, which shows the absolute filling height of the fluidized granulate in the first chamber 2 being greater than in each of the chambers 3-6 downstream of the first chamber 2.

Claims 44 and 45 are also patentable.

Conclusion

For the foregoing reasons, allowance of the application is respectfully requested. Should there be any questions regarding this reply, Applicants' undersigned representative can be reached at the telephone n umber given below.

Respectfully submitted,

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Date: January 30, 2006

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